THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

317.] PUBLISHED EVERY SATURDAY. [MARCH 11, 1837.

A LOOKING-GLASS FOR LONDON.—No. VI.

FIRE-INSURANCE, SUPPLY OF WATER, GAS, PAVING, SEWERAGE.

[Fish Street Hill, Monument, and St. Magnus' Church, with Procession of Firemen.]

THE engraving at the head of this article supplies an illustration of the fact that, however sharp and attentive individuals may be to their particular interests, communities learn slowly what is best for the general health, convenience, and comfort. That tall column, "pointing to the skies," commemorates a terrible event ('Penny Magazine,' vol. ii. p. 342) which weeded out the narrow streets and lanes where the plague, in its frequent visits, found the filth, discomfort, and misery on which it fed: yet, in spite of the warning, too many narrow streets sprung up on the site of those burned down; and the Monument on Fish Street Hill not only bore testimony to the great calamity which ultimately proved so beneficial, but seemed to rear its head over the narrow streets around it, as if to say, here, at least, another "Great Plague," or another "Great Fire," may find materials on which to work. Happily, neither pestilence nor fire, in aggravated forms, has visited us since the latter half of the seventeenth century—thanks, in a great measure, to our improved municipal arrangements: but it was not till the erection of new London bridge and its approaches, that Fish Street Hill assumed the handsome appearance it now presents. It looked very different a few years ago.

This leads us to take a view of a very important department of the social characteristics of London; the means by which it is secured and insured from the ravages of fire; the supply of water; of gas; the paving and the sewerage. On all these combined, depend a great many of the causes which make a city really great; not the greatness arising merely from magnificent public buildings or establishments, but that which communicates to the mass of the inhabitants the largest amount of social security, of enjoyment, of convenience, and of comfort. In all these respects London has much to improve: yet its inhabitants enjoy more of them in a single day, than the inhabitants of imperial Rome did in a year, with all its wonderful monuments and public places of resort.

We have hitherto had no special fire-preventive police, nor have we yet, under the direction of the government or municipal authorities. The law merely requires parishes to keep fire-engines and ladders in certain places, and to provide stop-blocks and fire-cocks on the mains of the water-works. Gratuities are also directed to be paid to engine-keepers, &c., who arrive earliest at any fire for the purpose of extinguishing it. The fire-insurance companies, however, have always kept up at their own expense a fire police. Formerly, each company had a distinct body of firemen, who were chiefly selected from the watermen; these had a peculiar garb, and wore the badges of the companies to which they belonged. They had annual processions and dinners. When an alarm of fire was communicated to one of them, he ran on to rouse his nearest companion, and having done so proceeded to the fire; the second went to alarm a third, and so on, till the whole body were roused. Ingenious as this was, there was a want of co-operation and a loss of time frequently experienced. The firemen pursued their usual avocations on the

river when not required to perform their occasional duties, and when an alarm of fire was raised during the night most of them might be sound asleep after the labours of the day. To obviate the evils arising from the employment of occasional servants, the greater number of the London fire insurance companies joined together, about four years ago, to form a permanent body of firemen, ready at all hours to give immediate attendance at fires. This is termed the "London Fire-Engine Establishment," and is supported at the expense of the following fire-insurance companies:—The Alliance, Atlas, British, Globe, Guardian, Hand-in-Hand, Imperial, London, Norwich Union, Phœnix, Protector, Royal Exchange, Scottish Union, Sun, Union, and Westminster; and these have been joined recently by the "Licensed Victuallers' Society." This fire establishment, instead of being under distinct officers appointed by each company, are embodied under the direction of a superintendent, with foremen and engineers under him, appointed to certain stations. At these stations there is constant attendance day and night. The firemen are clothed in a uniform of dark grey, with their numbers in red on their left breasts. They wear strong leather helmets on their heads, which have been found of great service in protecting them from accidents occasioned by the fall of walls or other matters. The stations are in Ratcliffe, St. Mary Axe, Finsbury, Cheapside, Blackfriars, Holborn, Covent Garden, St. Giles's, Oxford Street, Golden Square, Portman Square, Waterloo Bridge Road, Southwark Bridge Road, Tooley Street; with extra engines in Shadwell, Westminster, Lambeth, and Rotherhithe. The men appointed to this latter station have also the care of a floating-engine on the river, off Rotherhithe. The number of men on the fire-engine establishment is between ninety and a hundred.

In addition to this special fire-preventive body, it is the duty of the metropolitan police to give assistance in case of fire. In 1830 there were 380 fires attended by this body, and 51 lives saved; in 1831 the number of fires was 324, and the individuals saved 68; in 1832 there were 252 fires, and 47 saved. This does not include the fires which occurred in the "city" of London.

Sixteen fire-insurance companies of London paid, in 1835, upwards of 600,000*l.* of duty on fire insurances effected in their different establishments. The rate of duty is 3*s.* per cent. These companies, by means of their branches, take the greater portion of the insurances effected in Britain. Thus, for instance, the farming-stock insured in England in 1835, exempt from insurance duty, amounted to more than 41,000,000*l.* Of this amount the Norwich Union had insured upwards of 8,000,000*l.*, the County more than 5,000,000*l.*, the Sun nearly 5,000,000*l.*, and the Phœnix and Royal Exchange each about 3,500,000*l.*

ADVENTURES IN EGYPT AND SYRIA.

[In a previous Number of the 'Penny Magazine' (295) we gave some extracts from a Manuscript Journal of Francesco Cavaliero. We shall continue his story in two or three papers, connecting his narrative with such explanatory observations as may be necessary for understanding it.]

In describing the hollow squares into which the French infantry were obliged to form in order to resist the impetuous attacks of the Mameluke cavalry, our Italian journalist has omitted to mention a circumstance with which he must have been well acquainted, as he tells us he himself took refuge with his master's baggage more than once within those squares. The Republican army was accompanied by a numerous troop of artists, antiquaries, and men of letters, as Monge, Denon, and others of less note, who were to make designs of the temples, pyramids, and the rest, and examine and describe the land of Egypt while Bonaparte conquered it. These civilians were all classed by the soldiery under the general name of *savans*, or learned men; and as their previous habits of life had probably not fitted them to manage the fleet and spirited horses of Arabia and Nubia, messieurs the savans all rode upon asses. It was very soon found that the projects they had formed were not easily executed in the disturbed state of the country caused by a foreign invasion, and that neither artists nor authors could safely trust themselves anywhere unless there was a strong French force at hand to protect them. The savans, therefore, marched on their donkeys with the divisions of the army; and as the Mamelukes multiplied their attacks and surprises in all directions, it became necessary for their own safety to subject them to some military orders and manœuvres. In consequence, an order of the day appeared, stating very soberly, that at the appearance of the enemy the troops should all form in squares, and messieurs the savans throw themselves in the middle of these squares, where they would be out of harm's way. The savans and their asses had not escaped ridicule before, but this *ordre de jour*, which created a roar of laughter through all the army, rank, and file, became the groundwork of innumerable jokes. Whenever an alarm was given, and the squares began to form, the soldiers shouted out, "*Faites place aux ânes et aux savans*," (make room for the asses and the learned men) and these wicked wits accustomed themselves to call an ass, on all occasions, a *demi-savant*. Such were the sports of these volatile men, even when they were surrounded with the greatest dangers and privations, and suffering and committing horrid barbarities. It appears, however, that even the common soldiers were not indifferent either to the sublime objects they saw, or to the pursuits of the artists and men of letters, whom they cordially assisted in all their operations. Denon tells us that he drew his first view of the Pyramids on the knees of some of the soldiers, which served him for a table, and their bodies for a shade against the insupportable glare and heat of the sun. At Tentyra the whole army was overpowered by an electric emotion, and men and officers, without giving or receiving orders, turned aside from the route, and remained of their own accord during the rest of the day among those sublime ruins. At Thebes again, the whole army stopped short, in astonishment at what they beheld, and clapped their hands!

But we must turn to less agreeable subjects of contemplation. Soon after his return from Boulac, Cavaliero accompanied his master, Colonel Broune, in Bonaparte's fatal Syrian expedition and siege of Acre. His journal is thus continued:—

"The two flotillas from Alexandria and Damietta having arrived, with provisions, ammunition, and stores of all kinds, in the month of February following, the army, which consisted of about 20,000 men*, began their march from Grand Cairo. We found the roads tolerably good for about seventy or eighty miles, passing through many villages, and the surrounding country being well cultivated. After passing this delightful country, we soon entered the sand-plains, where we encamped for a few days, in consequence of many of the men being much fatigued, and others afflicted with sore eyes: several of the latter were sent back to Grand Cairo. A few days after this we continued our march through these plains, where we saw nothing else for

* This number is over-rated. Bonaparte only took about 12,500 men into Syria. They were divided into four divisions of infantry, under Generals Kleber, Regnier, Lannes, and Bon. Murat commanded the cavalry, which amounted to 800. Bonaparte mounted a small detachment upon dromedaries,—and this became the source of many more jokes among the horse-soldiers. —Ed.

many miles but the sky and burning sands, which occasioned many of the men to murmur, and exclaim they could not endure the heat. At length we entered Syria, where we found the climate cold, with showers of rain. We had not been more than two days in this country when the army was surprised and attacked by a body of Mameluke and Syrian Arabs, who sprang from behind the sand-hills upon the vanguard in full gallop, and cut a great number to pieces; then, wheeling upon the flank of the army, discharged their fire-arms, which made dreadful havoc upon the scattered parties, after which they retired again at full gallop behind the sand-hills. In this attack Bonaparte lost a great many men. After this attack the accoutrements of a Mameluke's horse were found, upon which there were nine pounds of solid gold. We had no other means of conveying the wounded but by placing eight or ten upon the back of a camel*; in this manner we continued our march. At length we came to the borders of a small river, about three feet deep and thirty in breadth, which we forded; and after the army had crossed, we halted to refresh the men.

"The next day we came in sight of Jaffa, which was immediately attacked, and the town carried by storm. The garrison, which consisted of about 5000 Turkish troops, was put to death." The siege and capture of El Arish took place before the storming of Jaffa, but probably Cavaliero's division was not present. The massacre of the prisoners of Jaffa was the darkest deed in the life of Bonaparte. They were not cut down and shot in the assault and storm, but murdered in cold blood, some hours after, outside the town. According to a more official estimate they were 3500 strong at the beginning of the siege. Cavaliero continues: "Here the stay of the army was very short, as they soon received orders to march again towards the plain of Nazareth, which we shortly came in sight of, and where the whole army assembled and took their course towards Mount Carmel, from whence a body of troops were ordered towards the sea-side. On their arrival there they were attacked by some gun-boats, at which intelligence the army was put in motion, and marched towards the town of Acre. Unfortunately, in this march I caught the disorder in my eyes which several of the soldiers had been afflicted with. The pain was so violent that I was unable to guide my horse, and at length became totally blind. The army arriving within two or three miles of Acre, they encamped, and I was taken to one of Colonel Broune's tents, where I had the advice of the doctor, who gave me a mixture, desiring me to wash my eyes frequently with it, which relieved the pain much. I continued blind for sixteen or eighteen days. On my recovering my sight I observed the army was in great confusion, and Bonaparte quite in distress to see his flotilla taken before his eyes by a British squadron. This flotilla came from Alexandria and Damietta, loaded with all kinds of provisions and stores, intended for the siege of Acre. One of the vessels by chance escaped, and got on shore, which was loaded with flour, and two brass twenty-four pounders, but no carriages or ammunition. In consequence of this disaster, he was obliged to begin the siege with very small metal, six, and nine, and twelve-pound field-pieces, and with these they made a breach in the wall. We mounted the breach, and got inside the town, but were soon repulsed by the British and Turkish troops."

After this *first* assault, General Kleber said, confidently, Acre would not be taken. According to M. Miot, a commissary in the French army, Bonaparte began to batter in breach with only three twelve-pounders. The fortifications were in a ruinous state; and he made sure of taking Acre as easily as he had taken Jaffa. That wonderful man's turn for oracular expressions, which he retained to the last day of his life, was first developed in these eastern expeditions. One day, during the siege, he said to Murat, "The fate of the eastern world is in that paltry town;—its fall is the key to all my projects. Let us take it,—and then Damascus falls,—all Syria is ours,—and—who knows?—the whole Orient!" The convoy with the heavy artillery was intercepted by Sir Sydney Smith; but the French succeeded subsequently in landing a few pieces at Jaffa, which were forwarded to Acre. Djezzar Pasha (who was in other respects a monster of cruelty), a corps of Albanians, Sir Sydney Smith, and a handful of British sailors, were the heroes of the siege. Cavaliero continues:—

"In the month of April following (the siege had begun on the 18th of March, 1799), a numerous body of Turkish troops made a desperate sally from the town, with the determination of destroying the camp; but they were repulsed by our troops, who made them retire again to the town, leaving a great number of dead and wounded on the field of battle; amongst the former we found a British officer, who was buried by our men with military honours.

"We continued the siege, and again mounted the breach once or twice, but each time were repulsed with considerable loss; upon which Bonaparte was determined to undermine and blow up the town. He put it in force by springing a mine, but it had not the desired effect, only the outer rampart being blown up. Both our provisions and ammunition now began to run very short throughout the camp, in consequence of which we were obliged to kill the horses and camels; and had it not been for the inhabitants of Jerusalem and Mount Lebanon, who now and then brought provisions and fruit to the camp, we must have been very much distressed for the want of provisions. Many of these people were very clever, and made us many articles we were in want of."

The peasantry of Palestine and all the coast of Syria detested Djezzar, the Pasha of Acre, on account of his cruelty and rapacity. At first they held the French as liberators, and even kissed the cannon, which they helped to place in battery against him. They permitted the soldiery to stray about the country, and helped them to fill and carry their water-skins. The venerable brook Kedron, so often named in the Scriptures*, was the source which mainly supplied the besieging camp, but its waters were found to be very unwholesome, causing colics and diarrhœas, and disposing the system to putrid and nervous fevers. The besiegers soon lost the good opinion of the peasantry. According to Cavaliero, Bonaparte kept three small dromedary corps constantly on the road between Acre, Damietta and Cairo.

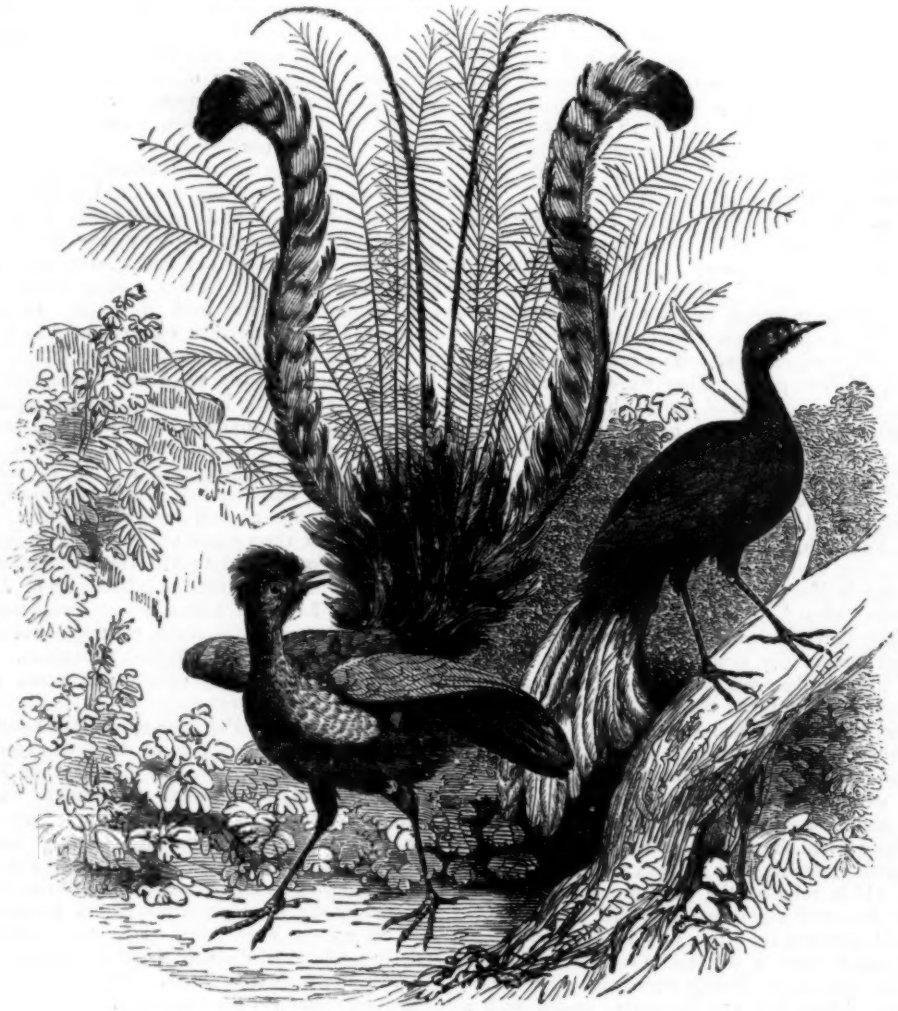
"These dromedaries were mounted by the soldiers, dressed as Mamelukes; saddles were made to fit them, their bridles were strings put through each nostril, by which the riders guided them; and in case of being attacked they dismounted, and made them lie down and the men stood behind the animals and fired upon their enemies, and when charged by cavalry they mounted again and went off in a full trot, which is so swift that the horse cannot keep up with them. When in the sands, these animals are very useful, as they will cross the deserts in half the time a horse would, and

* Larrey, the distinguished surgeon in chief of Bonaparte's army, devised means of carrying the wounded in panniers, one on each side the camel's hunch, so suspended as to give the least possible motion, and so constructed as to allow the sufferers to lie at full length. In a country where there were no carriageable roads, no better plan could have been adopted. The pace of the dromedary, when not forced into speed, is very easy.—Ed.

* And Asa destroyed her idol and burned it by the brook Kedron, 1 Kings, ch. xv. v. 13. See also 2 Kings, ch. xxii. v. 6, 12. 2 Chron. ch. xxix. v. 16. St. John xviii. v. 1., &c.

bear a long journey much better without either eating or drinking. A detachment of these dromedaries, with provisions and ammunition, was lost in the deserts, and supposed to have been buried by one of the whirlwind sands. At this time Bonaparte was so much in want of shot, that he offered large sums to any one that would bring shots of any description, either those fired from the town or from the English ships, not caring which way they were got as long as he could procure them, as some of them would fit the calibre of cannon he had; and when sufficient quantity was obtained, he fired continually till they made a breach wide enough to admit eight or ten men abreast to enter. The troops mounted it and stood a long resistance, but at length were obliged to retreat, with the loss of four or five companies, principally grenadiers. A good many of them took refuge in a mosque, where it was supposed they were massacred by the Turks. General Rampoon was taken on the beach, and was cut in pieces, as also many other brave men and officers.

THE LYRE-BIRD, OR SUPERB MENURA.



[The Male and Female Lyre-Bird.]

The beautiful bird of which the plate at the head of the present article represents a male and female, is a native of Australia, and both from its appearance, and the difficulty experienced in determining its affinities, has attracted the special attention of naturalists. M. Vieillot, in his work on the 'Birds of Paradise,' figures the lyre-bird (*menura superba*, Davies in Lin. Trans.) under the title of *Paradisea Parkinsoniana*, in honour of J. Parkinson, Esq., of the Leverian Museum, through whose means he received a drawing of it; and Shaw, in his 'Naturalists' Miscellany,' 577, following Vieillot, terms it the Parkinsonian Bird of Paradise. Vieillot, however, was preceded in his description by General Davies, who, in the year 1800, with juster views respecting the bird in question, characterized it in the 'Linnæan Transactions,' vol. vi., as the type of a new genus, and gave it the appellation of *Menura superba*, which is now its established title.

With respect to the affinities or natural situation in the arrangement of the feathered tribes, which the *menura* holds, there is considerable difference of opinion among ornithologists. Vieillot, as we have said, placed it among the birds of paradise. Dr. Shaw, in his 'Zoology,' and Dr. Latham, in his 'General History of Birds, place it in the *gallinaceous* order, regarding it as allied to the curassows, pheasants, and fowls. Baron Cuvier, in his 'Règne Animal,' places it among the "*passereaux*," or passerine order, (*Incessores*, Vig.,) observing that although "its size has induced some to associate it with the *gallinaceous group*, the *lyre-bird*

evidently belongs to the *passerine order*, its toes, except the outer and middle, which are united together as far as the first joint, being separated; it comes near the thrushes in the form of the beak, which is triangular at the base, and slightly compressed and notched at the tip; the membranous nostrils are very large, and partially covered with feathers as in the jays."

That the lyre-bird is not a *gallinaceous bird*, we have little hesitation in affirming; its size, as Cuvier observes, and more especially its terrestrial habits, which may in some respects resemble those of a fowl, have contributed to the establishment of this opinion, which the name *mountain pheasant*, given it by the colonists, has probably helped to confirm, but which general currency does not necessarily render true. Neither in the beak, the feet, nor (we may add) the plumage of the lyre-bird, do we recognize the characters of one of the *gallinaceous order*. On the other hand, there are certain genera (*pteroptocus*, *scytalopus*, and *megapodius*) usually regarded as forming part of the family of thrushes (*merulidæ*), to which in every essential character the genus *menura* closely approximates, and with these it will we think be found to be in immediate affinity. As however our object is not to enter into an abstruse account of the affinities of genera, we shall add nothing (and much might be added) to the above observation, but confine ourselves to the description and the habits of this interesting and elegant bird.

The *menura* equals a common pheasant in size, but its limbs are longer in proportion, and its feet much larger; the toes are armed with large arched blunt claws; the hind toe is as long as are the fore-toes (the length of these being nearly equal), but its claw is larger than that of any of the others; the scales of the tarsi and toes are large bold plates, and their colour is glossy black; the head is small, the beak, as Cuvier has described it, is triangular at the base, pointed and compressed at the tip; in the male the feathers of the head are elongated into a crest; the wings are short, concave, and rounded, and the quill-feathers are lax and feeble; the general plumage is full, deep, soft, and downy. The tail is modified into a beautiful long plume-like ornament, representing, when erect and expanded, the figure of a lyre, whence the name of lyre-bird. This ornamental tail is, however, confined to the male. In the female the tail is long and graduated, and the feathers are perfectly webbed on both sides of the shaft, although their texture is soft and flowing. In the male the tail consists of sixteen feathers, of these (see the plate) the outer one on each side is broadly but loosely webbed within, its outer web being narrow; as it proceeds it curves outwards, bends in, and again turns boldly outwards and downwards, both together resembling the framework of an ancient lyre, of which the intermediate feathers are the strings; these feathers, except the two central, which are truly but narrowly webbed on the outer side, consist each of a slender shaft, with long filamentous bubules, at a distance from each other, and springing out alternately. The appearance of these feathers, the length of which is about two feet, is peculiarly graceful; their colour is amber brown, but the two outer tail-feathers are grey tipped with black, edged with rufous, and transversely marked on the inner web with transparent, triangular bars. The general plumage of the *menura* is amber brown above, tinged with olive and merging into rufous on the wings, and also on the throat. The under parts are ashy grey. With respect to the habits of the lyre-bird much yet remains to be known. Shaw, in the account he collected, observes that its powers of song are very great:—"At the early part of the morning it begins to sing, having a very fine natural note; and gradually ascending some rocky eminence, scratches up the ground in the manner of some of the pheasant tribe, elevating its tail, and at intervals imitating the notes of every other bird within hearing; and having continued this exercise for about two hours, again descends into the valleys or lower grounds."

It is in the hilly districts of Australia that the menura is to be found, and its manners are shy and recluse; it is almost exclusively terrestrial, seldom taking wing, and when forced to do so flying with labour and difficulty. Dr. Latham remarks, "It is said that it will frequently imitate the notes of other birds so as to deceive most people;" and we may here add that the musical powers of this bird, which we have been inclined to doubt, have been confirmed to us by the testimony of a gentleman who, during his residence in Australia, had many opportunities of gaining information on the subject, and he assured us that not only were its own notes rich and melodious, but that it imitated those of other birds with surprising tact and execution. Mr. George Bennett, however, who notices the menura in his 'Wanderings in New South Wales,' does not allude to this circumstance, one of considerable importance; he neither confirms the statements of Shaw and others respecting its powers of song, nor refutes them as erroneous. His information is nevertheless interesting. The native names of the menura, according to this gentleman, are "béleck béleck," and "balangara;" it is common in the mountain ranges in all parts of the colony of New South Wales, but it has been much thinned in its numbers in some districts, in consequence of the tail-feathers of the male being saleable at Sidney, where they are highly valued. In the ranges of the Illawarra district, where it once abounded, the menura is very rare.

"The lyre-bird," observes Mr. Bennett, "is a bird of heavy flight, but swift of foot. On catching a glimpse of the sportsman, it runs with rapidity, aided by the wings, over logs of wood, rocks, or any obstruction to its progress; it seldom flies into trees except to roost, and then rises only from branch to branch. They build in old hollow trunks of trees which are lying upon the ground, or in the holes of rocks; the nest is merely formed of dried grass, or dried leaves scraped together: the female lays from twelve to sixteen eggs, of a white colour, with a few scattered light blue spots; the young are difficult to catch, as they run with rapidity, concealing themselves among the rocks and bushes. The lyre-pheasant, on descending from high trees, on which it perches, has been seen to fly some distance; it is more often observed during the early hours of the morning and in the evening, than during the heat of the day. Like all the *gallinaceous tribe*, it scratches about the ground and roots of trees, to pick up seeds, insects, &c. The aborigines decorate their greasy locks, in addition to the emu feathers, with the splendid tail-feathers of this bird when they can procure them."

Dr. Latham says, "I do not find that it has been yet attempted whether this bird will bear confinement; but if the trial should turn out successful, it would be a fine acquisition to our menageries." This hint has, we believe, never been acted upon; the lyre-bird has not as yet been conveyed alive to Europe, which, were it a truly *gallinaceous* bird, would be no very difficult task to accomplish. The emu lives and breeds in our parks and menageries, and birds less hardy, as parakeets of brilliant plumage, natives of the same country, are brought over in abundance, and bear our climate well; but, from some cause or other, the lyre-bird, of which skins are now imported in tolerable abundance, has yet to be made the subject of trial. An attentive observation of its habits and its food, which, were it alive in our menageries, would be a matter of course—but especially a knowledge of its internal anatomy, which is yet unknown, would settle the point at issue as to its true situation in the arrangement of the feathered race, and disclose its genuine affinities.

DOMESTIC MANUFACTURES—THE FACTORY SYSTEM—MIGRATION OF AGRICULTURAL LABOURERS TO THE MANUFACTURING DISTRICTS.

Dr. Ure* remarks, that "Manufacture is a word which, in the vicissitude of language, has come to signify the reverse of its intrinsic meaning, for it now denotes every extensive product of art which is made by machinery, with little or no aid of the human hand; so that the most perfect manufacture is that which dispenses entirely with manual labour." It is within the recollection of very old persons when most of the common articles of clothing were the production of the hand, aided indeed by a very simple mechanic power,—the household spinning-wheel, which itself was an improvement on the ancient distaff. No. 258 of the 'Penny Magazine' contains a notice of the 'high-wheel,' which is now nearly as much forgotten as the distaff. It is there stated that, "in every farm-house the wheel was the evening fire-side companion; and while the mistress or the dame was spinning fine tow, the servant-girl was allowed to spin 'harding' for herself, after the termination of the day's labour. The yarn was sent periodically to the weaver, and the servant was allowed to have a part of her own, for present use, woven at the end of her mistress's web, either as linsey-woolsey or as linen." Under so imperfect a division of employment as existed at the above period in regard to the production of linen and woollen fabrics, these materials were prepared by many families under the domestic roof, and by the same individuals for whose use they were intended, or by the household servants. The inconvenience of the household system of manufactures may be compared to the necessities of the earliest stage of agriculture, when every man is compelled to cultivate a patch of ground, as the surplus produce raised is so small as to be incapable of affording him entire support while engaged in some other useful labour. The slow progress of improvement amongst a population whose labours are applied to many different objects is well known. In the most northern parts of Europe, there are individuals who are not only agriculturists and manufacturers, but fishermen also; and it is probable, owing to the severity of the winter, which compels them to provide a stock of provisions, and to exercise some degree of foresight, that they are removed but little above the savages of North America. Where household manufactures supply the population with clothing, foreign trade is limited chiefly to raw materials; and a much smaller number of people is benefited than if the rude produce were worked up into manufactured goods and then exported. The benefit is still greater where one country obtains the raw produce of another, employs great numbers in manufacturing it for use, and re-exports it to the most distant places. A single pound of cotton, which costs 3*s.* 8*d.*, is sometimes spun to a length of 167 miles, and the price is increased to 25 guineas. Mr. M'Culloch estimates the number of persons obtaining their subsistence in the various departments of one branch of British manufactures (cotton) at from 1,200,000 to 1,400,000, including in this number those who are engaged in the construction and repair of machinery and buildings. The domestic manufactures have been completely superseded by a more perfect division of employment, and by the aid of machinery of the most accurate and wonderful capabilities. The change is sometimes regretted, but the advantages which have been gained by the transition far exceed those which were characteristic of the former period.

An engraving of the household spinning-wheel and of the first spinning-machine, which was a multiple of the ordinary wheel, may be seen in the 'Penny Magazine,' No. 274. The invention of the latter was occasioned by an increased demand which it was impossible to meet with the imperfect means then employed, and in the absence of proper co-operative power. This great crisis in manufactures is said to have occurred about the year 1760. At this period "the workshop of the weaver was a rural cottage, from which, when he was tired of sedentary labour, he could sally forth into his little garden, and with the spade or the hoe tend its culinary productions. The cotton-wool which was to form his weft was picked clean by the fingers of his younger children, and was carded and spun by the elder girls, assisted by his wife; and the yarn was woven by himself, assisted by his sons*." The inconvenience of this system, though far less than that under which these domestic manufacturers did not exist at all as a distinct class, was soon apparent when an increased demand urged them beyond the even tenor of exertion to which they had been accustomed. The country weavers who had received the raw material from the manufacturer of Manchester, could not complete his work at the time required by the urgency of business. Looms were often at a stand for want of yarn. A weaver was under the necessity frequently of taking a circuit of three or four miles in a morning before he could collect cotton weft enough to keep his loom going during the day. The weavers could easily multiply their numbers, but the great difficulty was a sufficient supply of the weft produced by the spinster. The weaver was often obliged to make presents to the females in order to quicken their diligence at the wheel; and as others were equally anxious to obtain a supply, the competition for weft was unremitting. It might happen, indeed, that higher wages instead of stimulating production might have a contrary effect; the same sum being obtained as formerly, and in a shorter space of time, the rest could be wasted in idleness. At all events the manufacture was in a very uncertain and unsatisfactory state, and little reliance could be placed on the execution of orders. The invention of the spinning-machine (for an engraving of which see 'Penny Magazine,' No. 274) was the result of attempts to surmount these difficulties. The first steam-engine constructed for a cotton-mill was made by Mr. Watt in 1785, and it was not until four years afterwards that steam-power was applied to the same purpose in Manchester. In 1764 the imports of cotton did not amount to 4,000,000 lbs. In 1785 the quantity of cotton imported for use into the United Kingdom was 17,992,882 lbs.; in 1835, only fifty years afterwards, the quantity imported amounted to 363,702,963 lbs., being an increase of upwards of 2000 per cent. In 1790 the total value of manufactured cotton goods exported was 1,662,369*l.*; in 1835 the total value exceeded 22,000,000*l.* The total value of the goods manufactured both for the home and foreign market is estimated at 34,000,000*l.*, and the capital employed at the same sum. This immense and rapid revolution in the industry of the country has effected social alterations, the extent and nature of which have scarcely yet been thoroughly investigated. Doubts have been expressed as to whether the change has been beneficial, but there can be no doubt that it was inevitable; and as every state of society is attended with some peculiar difficulties, there is no reason to believe that those by which our present advanced condition is accompanied are a reasonable subject of complaint, when compared with the peculiar disadvantages of the state of society by which it was preceded; and taking a fair and reasonable view of the two periods, the present seems to be the most preferable.

The inconvenience of the household system of manu-

* 'Philosophy of Manufactures.' By Dr. Ure. 1835.

* 'History of the Cotton Manufacture of Great Britain.' By Dr. Ure.

facture has already been adverted to as indicating an imperfect application of labour; and the impracticability of the domestic manufacturer ever being able to supply the demands of an extensive home and foreign demand, even when he had in some measure separated his occupation from that of a cultivator of the ground, has been demonstrated by the facts which have been given illustrative of the progress of the trade since the domestic system has been opposed by that which has now obtained for itself a clear and almost unlimited field; the efforts of mental power, manual ingenuity, and mechanical capability being all wrought up to the highest state of perfection, and directed to the accomplishment of one object. The system under which this is accomplished is called the "Factory System."

Before noticing the characteristics, and some parts of the economy, of the factory-system, it may be interesting to regard it in its rudest state. The contrast between one of the great factories at Manchester, Stockport, or Belper, will be found striking indeed when compared with the cow-houses in which the poor lace-makers of Normandy assemble in order to perform their task with more comfort than they could obtain at their own fire-sides. Mr. St. John, in his 'Journal of a Residence in Normandy,' gives the following account of this mode of procuring warmth:—"At Lions-sur-Mer, and other villages on the sea-coast, the lace-makers take refuge in the cow-houses, where the breath of the cattle diffuses an agreeable warmth through the building. They agree with some farmer, who has several cows in warm winter-quarters, to be allowed to carry on their operations in company with the 'milky mothers.' The cows are tethered in a row, on one side of the apartment; and the lace-makers are seated cross-legged upon the ground, on the other, with their feet buried in straw. Opposite each girl, in a small niche in the wall, is a candle placed behind a clear hemispherical bottle, the flat side of which is towards the candle, and the globular one towards the knitter. This bottle is filled with water, and throws a small stream of strong, pure, white light upon the cushion, which renders the minutest thread of the lace more visible, if possible, than by day. These cow-houses being generally too dark to allow of their ever working without candles, and the cattle being sometimes out in the fields by day, the lace-makers prefer working all night. Numbers of young men, of their own rank, resort to these cow-houses, and sit or lie down in the straw, by the cushions of their sweethearts, and sing, tell stories, or say soft things all night, to cheer them in their labours. The curé of the place, anxious lest the morals of his pretty parishioners should suffer, has more than once endeavoured to keep away the lovers, but in vain." Mr. St. John adds that to avoid all real ground for scandal, the mothers and elderly female relations of many of the girls remain with them all night, pursuing the same occupation. The factory workers of Lancashire will smile at this imperfect resemblance to the system with which they are acquainted, and at the waste of labour and want of comfort by which it is attended. But even the lace-makers of Normandy enjoy a superior condition to that of the hand-loom workers of some parts of England. These unfortunate individuals often work sixteen hours a day, with scarcely any relaxation, for the small pittance of 6*s.* or 7*s.* a week. Their dwellings are miserable in the extreme; the floor often damp and unpaved; and they scarcely possess any furniture. It is satisfactory to learn that this class of workmen, having at length been convinced of the impossibility of competing with steam-power and the most perfect machinery, have been gradually relinquishing their wretched occupation, and obtain higher wages in the factories. The cruel transition which these men have endured, would have been far less protracted if attempts had not been made to attribute their distress to other causes than that which evidently arose from the constantly increasing competition with the power-loom. So lately as 1813 the number of hand-looms in Great Britain was not more than 2,400; in 1820 they had increased to 14,150; in 1829 to 55,500; and in 1835 to 116,801. The trade of the hand-loom weaver was learned without much difficulty, and on any fluctuation in agriculture or in handicraft employments, many individuals who had learned the art of weaving at an early period of their lives, fell back upon it as a temporary resource; and thus, independent of the progress of the power with which they were in competition, and which, in the nature of things, must necessarily triumph at last, their wages were kept low by the facility with which individuals could leave their usual occupation, and resort to weaving in any occasional emergency. The struggle was also protracted by the flourishing state of the cotton trade, which rendered even the powers of machinery inadequate to supply the demand of extending markets.

The truth is, that employments which are least aided by mechanical power, which only call forth the rudest elements of labour, the straining of muscles and of sinews, are more exhausting in their effects, are not paid so well, are subject to greater fluctuations, and less valuable to society in an economic point of view, than when they are assisted by machinery. The workman then becomes a more intelligent agent amidst the processes which are going on around him, and he exchanges incessant exertion for the less laborious and more intellectual operation of directing and superintending an inanimate power which seems almost obedient to his will, and like an untiring servant never grows fatigued in his service. There can be no doubt, notwithstanding some disadvantages which are perhaps not necessarily incidental to the factory system, and which time and increased knowledge and intelligence may lessen, that its moral effects have on the whole been beneficial, and that it has sustained the population in a higher condition than they could have reached, had that system never existed. We are not, therefore, disposed to regret that the domestic manufactures have been superseded. Our own population are not only better and more cheaply supplied than they could have been under the household system of manufacture, but we are enabled to supply the markets of nearly the whole world with the products of our surplus industry; and the value of the exports of cotton goods alone has been raised to a higher amount than that of every description of exported manufactures and produce previous to the existence of the factory system, and when the aid of machinery was not extensively employed.

According to official returns, published in 1834, the total number of factories, of all kinds, in the United Kingdom was 3236, and the number of persons employed within them was 355,373. The following summary of the returns shows the extent and importance of each branch of the great textile manufactures:—

Cotton	Factories,	1304	Persons	employed,	220,134
Wool	,,	1322	,,	,,	71,274
Silk	,,	263	,,	,,	30,682
Flax	,,	347	,,	,,	33,283

Lancashire is the great seat of the cotton-manufacture, and contains more than one-half of the cotton factories of the United Kingdom, the number being 715, and the total number of persons employed in them 122,415. There are 159 factories in Scotland; 126 in the West Riding of Yorkshire; 116 in Cheshire; and 92 in Derbyshire.

The following statements, illustrative of the condition of factory workers, and the moral economy of the factory system, are chiefly taken from recent works of

authority on the subject*. The cotton-spinner has not to serve a tedious apprenticeship, and he has not expensive tools to provide. His capital consists of skill, intelligence, and industry; and yet, as Dr. Ure remarks, the lowest wages which he receives are "nearly three times those of a farm-labourer or hand-weaver for as many hours' occupation, and for much severer toil." Wages form a small part only of the manufactured article, and the workmen being employed in connexion with costly machinery, their wages are sustained at a high rate. The quality of the work performed being of the utmost importance to the manufacturer, it is his interest to maintain this high scale, as the saving in wages would be ill compensated by the deteriorated quality of the work on which the spinner is employed. Instances are nowhere so common as in the manufacturing districts of workmen becoming opulent proprietors. The great capitalists who are engaged in the cotton trade are constantly in need of the services of intelligent men, of steady and industrious habits; and when they discover such, their progress from overlookers to managers, or other offices of trust, and afterwards to a lucrative connexion as partners, is frequently the work of a few years. A spinner reckons the charge of a pair of "mules" (spinning machines) as good as a fortune, which he may enjoy during his life if his conduct be good; and there is scarcely any man connected with a factory who may not (if he have the necessary resolution and good sense) obtain a comfortable independence. The department of labour in a cotton factory which is the worst paid is that in which mechanical power is wholly dispensed with. This species of work consists in "batting" cotton by hand, for fine spinning, something in the same manner that corn is threshed with a flail. It is performed by women, and does not bring them more than 6*s.* 6*d.* weekly; while women and children, who attend to some process in which the exercise of the mind is substituted for that of the muscles, receive double the sum. The more refined the labour in factories is made, the lighter and pleasanter it becomes. The steam-engine is ever at work, but the labour of the attendant is occasional only,—joining breaking threads and other similar operations being his chief business. This is the occupation of three-fourths of the children employed at the mules in cotton factories. Mr. Tufnell†, one of the Factory Commissioners, says,—"When the carriages of these have receded a foot and a half or two feet from the rollers, nothing is to be done, not even attention is required from either spinner or piecer." Both of them, says Dr. Ure, stand idle for a time, and in fine spinning, particularly, for three-quarters of a minute or more. A child who remains at this work twelve hours has nine hours of inaction; and if he attends two mules, six hours. Spinners sometimes employ the interval in the perusal of books. A male spinner told Mr. Tufnell that, in this manner, he had read through several books. The successive improvements introduced into the machinery, which have enabled the spinner to accomplish more work in a shorter space of time, instead of having had the effect of reducing his wages, has increased them. Dr. Ure states that, in 1829, the spinner turned off 312 lbs. of yarn in the same time that he now takes to turn off 648. The rate per lb. was 4*s.* 1*d.* in 1829, and 2*s.* 5*d.* in 1835; but 648 lbs. being wrought off in the same space of time which formerly was required for working off 312 lbs., the sum received is 292*s.* more than was obtained in 1829. He has therefore largely participated in the advantages of improved machinery. The time of working in cotton-mills in Manchester is less, by about one hour daily, than in the factories either of Europe or America. None of the mills were worked during the night when Dr. Ure made his survey of the Manchester factories. The hours of labour are, generally, less than they were a few years ago.

The structure in which the cotton manufacture is carried on, the factory, with the machinery which it contains, does not cost much less than 100,000*l.* It is made fire-proof, and the height is usually carried to seven stories. The apartments are warmed by the steam generated by the engines which put the whole machinery in motion, which is diffused by cast-iron pipes seven or eight inches in diameter. A system of ventilation, more perfect than anything which until very recently has been applied to the House of Commons, is constantly kept up. The foul air is extracted by excentric fans, making 100 revolutions in a second, and they not only ensure a constant renewal of the atmosphere, but prevent the ingress of impure air from without. The labour of ascending to the uppermost stories of so lofty a building is avoided by the teagle, a machine for hoisting goods or workmen, described in the 'Penny Magazine,' No. 212. The mere advantage of shelter which a well-aired and thoroughly warmed factory affords would be highly appreciated by the lace-makers of Lions-sur-Mer; and it might be conceived that not a single hand-loom weaver could be found who would not gladly enter the factory, where, in addition to the comfort which he would meet with, the rate of wages is a great deal higher, and the labour much less. There is, however, an obstacle which is a bar to the apparently agreeable transition. The industry of the manual labourer is discontinuous, that is, it depends upon the caprice of the workman, who is perfect master of his own actions. He can give over his occupation at any moment, and, taking hand-weavers generally, the average work which they turn off in a week seldom exceeds one-half of what their looms could produce if kept continuously in action like the machinery of a factory. Dr. Ure was told by a warehouseman in Manchester, who employed 1800 weavers in the neighbouring districts, that they seldom brought him in 2000 pieces per week; whereas they could, if they had laboured steadily, have manufactured 9000 pieces. Mr. Strutt, of Belper, also mentioned to Dr. Ure a fact which confirms the preceding opinion. Finding that much distress existed in a village of stocking-weavers, in his neighbourhood, he invited a number of the most necessitous families to participate in the higher wages and steadier employment of the spinning-mills at Belper. They were at first highly delighted with the change, but their irregular habits of work were soon after displayed, and they subsequently returned to their wonted mistaken independence and consequent poverty. The regularity required in the factories tends to check the intemperate use of ardent or fermented liquors; as habits of intoxication would unfit a man for attending upon the delicate processes of the spinning-machines. Regular application of a man's powers are absolutely essential when they act in concert with machinery, and the task is not easy for individuals who have been accustomed to desultory labour; but the difficulty is soon conquered when a determined attempt is made to secure the advantages of factory employment. In another paper we shall notice the factory system in connexion with the advantages which it offers to the unemployed labourers of some of the agricultural districts.

* Dr. Ure's works, previously quoted. 'Progress of the Nation,' by G. R. Porter, Esq. 'Reports of Factory Commissioners.'
† 'Report of Factory Commissioners.'

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

LONDON: CHARLES KNIGHT & CO., 22, LUDGATE STREET.

Printed by William Clowes and Sons, Stamford Street.